

# Call for Papers

## IEEE Journal on Selected Areas in Communications (JSAC)

### Simple Wireless Sensor Networking Solutions

Wireless sensor networks (WSNs) have witnessed a tremendous upsurge in recent years in both industry as well as academia. This is mainly attributed to the unprecedented opportunities they offer. However, WSNs also face significant design challenges, including their limited computing abilities and their dependence on finite battery energy. A major obstacle to the ubiquitous deployment of WSNs is the absence of reliable and easy-to-implement communication stacks. The main design criteria are thus to lower algorithmic complexity to facilitate low-power solutions that can be embedded into low-cost microprocessors, and to extend the lifetime of the network without jeopardizing reliable and efficient communications from sensor nodes to other nodes as well as to data sinks. Such stringent design requirements can be met by a plethora of approaches, e.g., using cross-layer design paradigms, distributed signal processing algorithms, energy-efficient medium access control, fault-tolerant routing protocols, self-organizing and self-healing sensor network mechanisms and reliable data aggregation algorithms, among others. Viable solutions will impact both commercial activities as well as standardization approaches, including IEEE 802.15.4, IETF ROLL, Wireless HART and WOSA. In light of the above, the main purpose of this special issue is twofold:

- to promote novel approaches in analyzing, designing and optimizing large-scale energy and complexity constrained WSNs, and
- to expose novel, readily deployable protocol solutions that are of low complexity and hence facilitate very cheap network deployment and maintenance,

with the ultimate goal of obtaining a useful and practically viable wireless sensor networking solution.

#### Topics of Interest:

The topics relevant to this special issue include but are not limited to:

- performance bounds (link and network capacity, with and without imperfections, etc.)
- data centric approaches (data fusion, aggregation, source coding, signal processing, etc.)
- protocol centric approaches (novel PHY, MAC and networking paradigms, etc.)
- cross-layer and cross-functionality designs (joint source/channel coding, etc.)
- cooperative and distributed algorithms (cooperative PHY, distributed signal processing, etc.)
- key functionalities (security, localization, self-\*, synch., abstraction, ease of programming, etc.)
- interdisciplinary approaches (principles borrowed from physics, etc.)

Papers must be tailored to the problems of WSNs and explicitly consider complexity and energy constraints. The editors maintain the right to reject papers they deem to be out of scope of this special issue. Only originally unpublished contributions and invited articles will be considered for the issue. The papers should be formatted according to the IEEE-JSAC guidelines (<http://www.jsac.ucsd.edu/Guidelines/info.html>). Authors should submit a PDF version of their complete manuscript via EDAS (<http://edas.info/newPaper.php?c=7029&>) according to the timetable below.

#### Important Dates:

Submission deadline:	1 May 2009
Author Notification:	1 November 2009
Final Manuscript:	15 February 2010
Publication:	Q3 2010

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